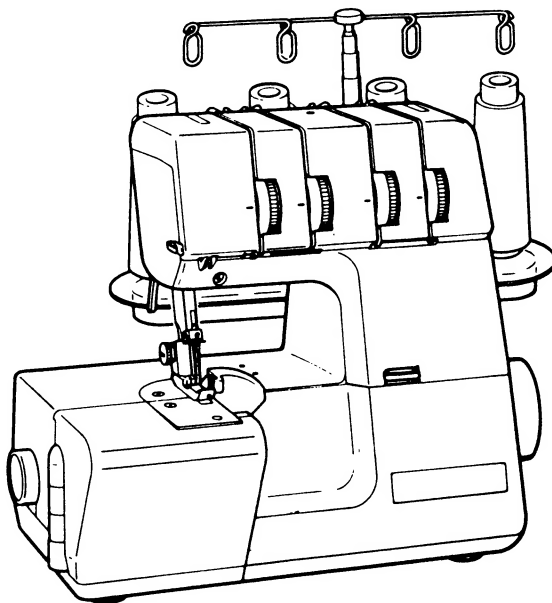




SERVICE MANUAL



MODEL 206-208-228-734-734D
REVISED JANUARY 1990

WHITE SEWING MACHINE CO.
11760 Berea Road
Cleveland, Ohio 44111

BEFORE SERVICING !!

Most of the problems encountered with while sewing with over-lock sewing machine are attributable to; Incorrect threading, Use of defective needle, Threads tangling around on the paths, or unbalance of thread tensions.

Please check the following points again, before you start to proceed on any adjustment work.

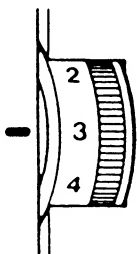
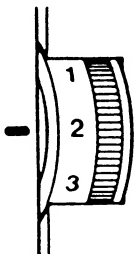
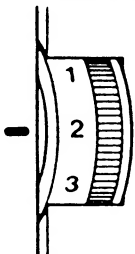
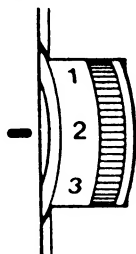
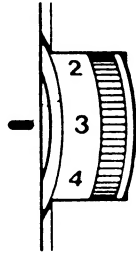
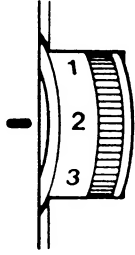
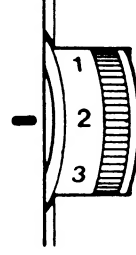
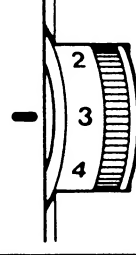
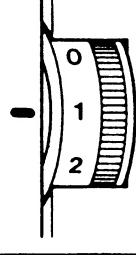
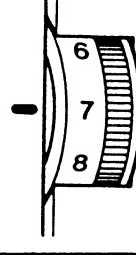
1. Thread breaks. Is the machine correctly threaded ?
Is the needle not bent ?
Are the tension controls properly set,
not imparting excess tension on any
thread ?
Is the needle correctly set ?
Is thread guide pole fully extended ?
Is thread not tangling around spool ?
Is thread not tangling around thread
guides ?
2. Needle breaks. Is needle correctly set ?
Are thread tensions not excessive ?
Is needle not contacting needle plate,
needle guard, loopers, etc. ?
Is fabric not pulled while sewing ?
Is presser foot securely fixed ?
3. Skipping stitches .. Is needle not bent ?
Is needle point not blunt ?
Is needle correctly set ?
Is needle correctly threaded ?
4. Fabric not properly cut Is upper cutter blade not dull ?
Is upper cutter blade not damaged ?
Is lower cutter blade not damaged ?
Is upper cutter properly set ?
5. Puckering, or irregular stitches Is the machine correctly threaded ?
Is thread not tangling around thread
guides ?
Are the thread tensions properly
adjusted ?
Is fabric not pulled when sewing ?

If the problems still exist after checking and correcting conditions as listed above, proceed on further adjustments in the necessary areas.

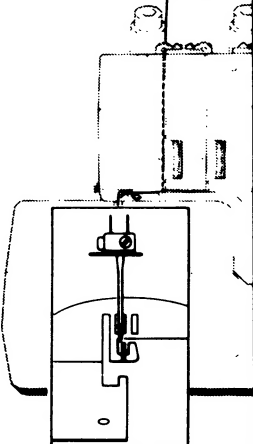
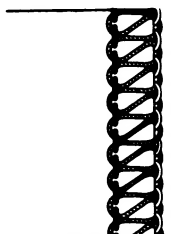
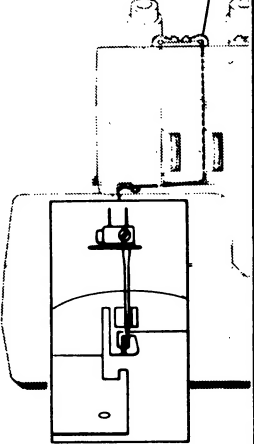
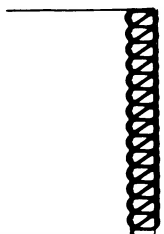
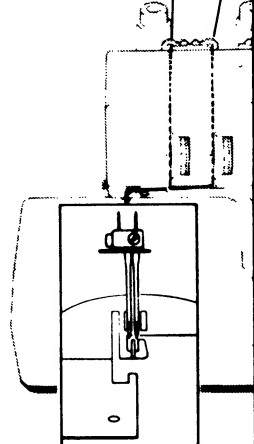
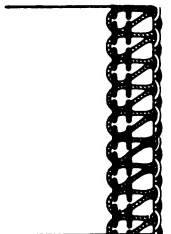
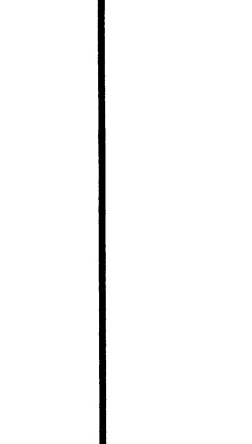

*** Turning hand wheel slowly by hand, observe the relative positions and timing among the needle, loopers, and feed dogs. By repeating this, you will acquire knowledge of the correct timing of the machine. ***

ADJUSTING THREAD TENSIONS 208-228 only

Proper balance of thread tensions vary depending on type and thickness of the fabric and threads.
 First restore all the tension controls to "0", and re-set them as illustrated below, as starting guide for further fine adjustments.

Thread Stitches	Needle Threads		Upper Looper Thread	Lower Looper Thread
	Left Needle	Right Needle		
General Lock Stitches				
Narrow Hemming				
Rolled Hemming				

For models 734-734D use left needle.

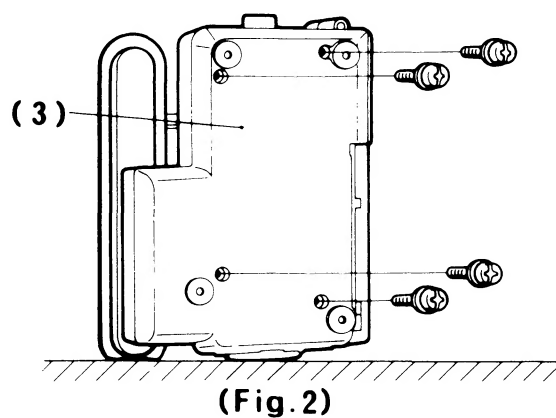
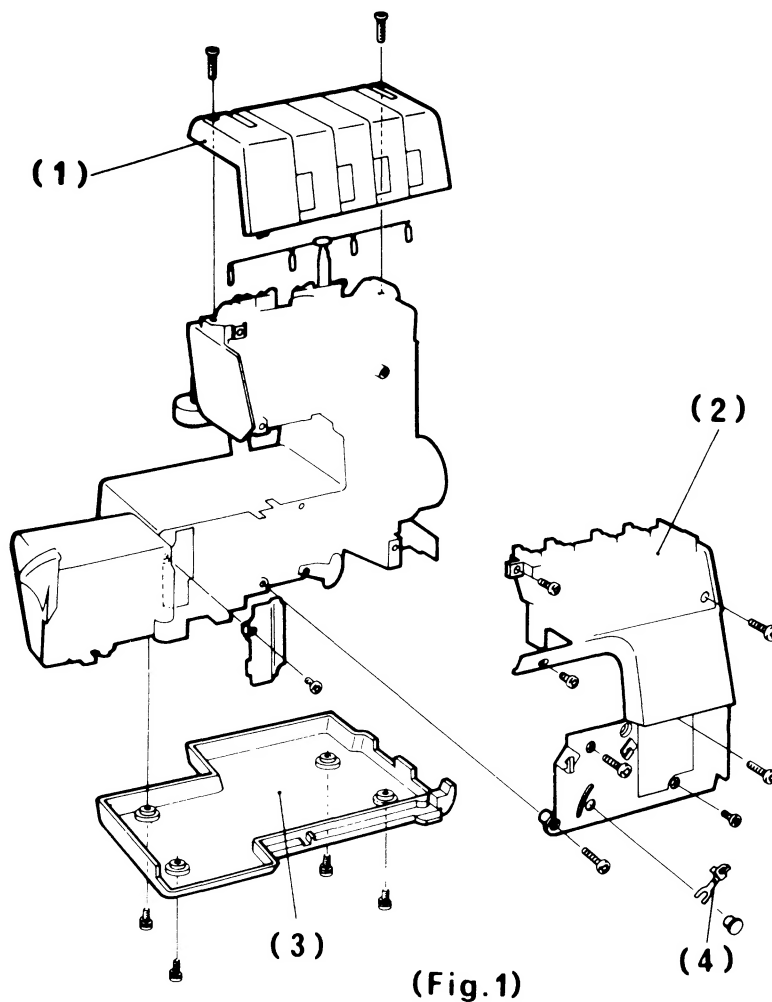
Number of threads	3 Threads		4 Threads (described previously)	
Overedge width	5 mm	2.8 mm	5 mm	
Needle(s)	Use left needle only	Right needle only	Two needles	
Needle thread tension control(s)	3	2	3	2
	 	 	 	 

DISASSEMBLING / ASSEMBLING OF COVERS

To disassemble covers from machine body, take out; 2 set screws from Top Cover; 7 screws from Front Cover, as illustrated.

To remove base Cover, turn up machine to stand on its side, and take out 4 set screws as shown.

Thread guides (4) have to be removed before front cover (2) is disassembled.

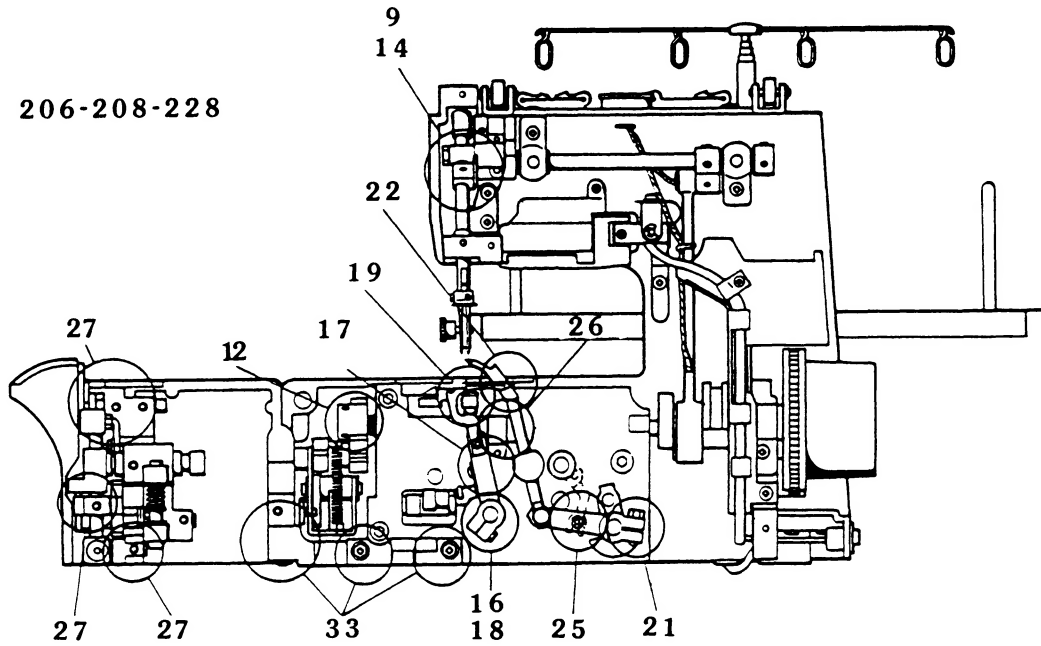


VARIOUS ADJUSTMENTS

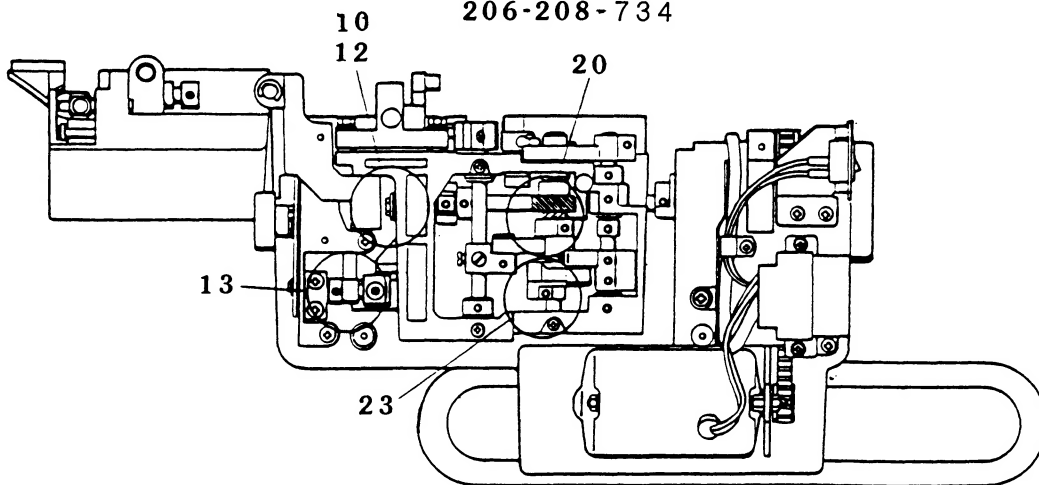
Page 7	Timing Gauge
8	Procedures to check timing of needle and loopers
9	Presser foot height
10	Feed dog height
11	Feed dog timing - vertical motion
12	Feed dog timing - lateral movement
13	Clearance to needle plate hold
14	Needle height
15	Upper thread guide position
16	Needle distance to lower looper point
17	Lower looper height 228-734D
18	Needle clearance to lower looper
19	Needle guard position
20	Needle and lower looper timing
21	Needle distance to upper looper point
22	Clearance between upper and lower loopers
23	Upper looper timing
24	Lower looper height 208-734
25	Oscilating thread guide position 206-208-228
26	Upper cutter timing
27	Replacing cutters
28	Replacing cutters cont'd
29	Replacing cutters cont'd
30	Replacing cutters cont'd
31	Replacing cutters cont'd
32	Replacing cutters cont'd
33	Positioning of side cover (cutting unit)
34	Positioning of cutting unit cont'd
35	Clearance between front feed dog and rear feed dog
36	Wiring to terminal block
37	Oscilating thread guide position 734-734D
38	Adjustment of thread tension regulators

*** Always use "HA x 1SP" #14 needle for adjustments. ***
(Sharp point)

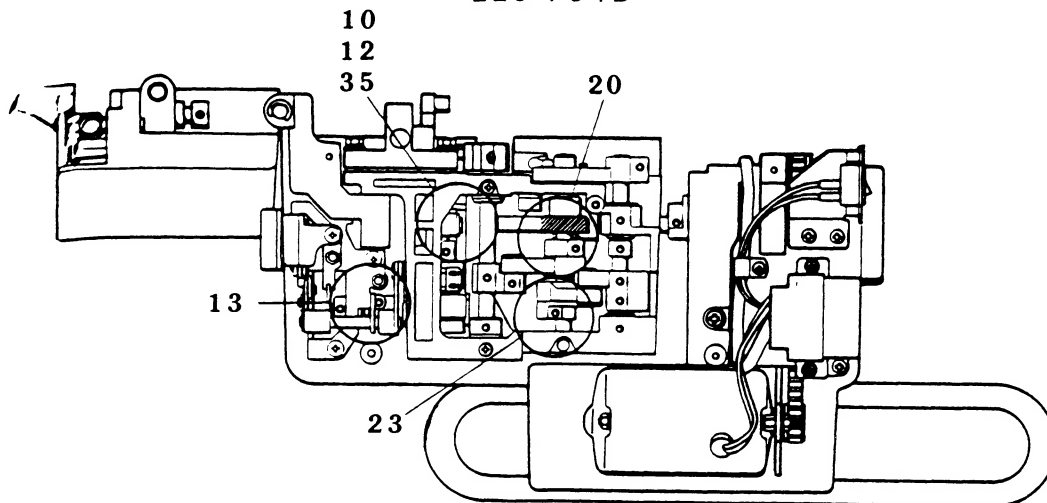
206-208-228



206-208-734



228-734D

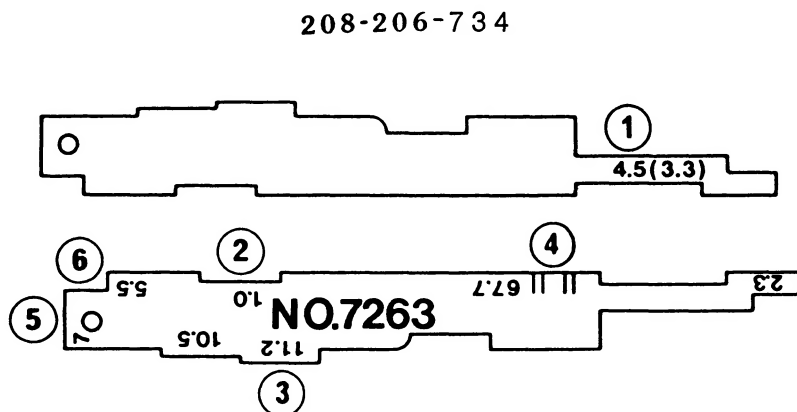
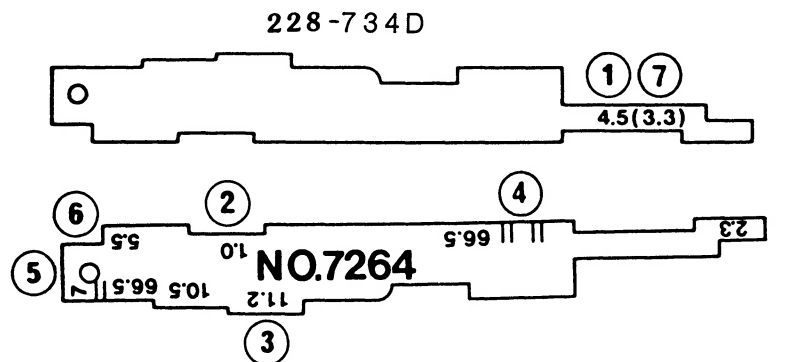


TIMING GAUGE

This is a multi-gauge to be utilized to check machine timing, or dimensions of, or clearances between relative parts at designated conditions.

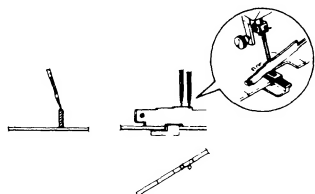
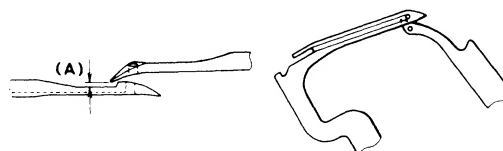
Follow instructions in corresponding sections.

Check Points	Standard Dimension	Applicable Models
1 Needle height	11.2	228, 208,206 - 734 - 734 D
2 Feed dog height	1.0	228, 208,206 - 734 - 734 D
3 Presser foot height	4.5	228, 208,206 - 734 - 734 D
4 Lower looper height	66.5 67.7	228-734 D 208,206 - 734
5 Needle distance to Lower Looper Point	7.0 2.3	228, 208 - 734 - 734 D 206
6 Needle distance to Upper Looper Point	5.5	228, 208,206 - 734 - 734 D
7 Clearance between front feed dog and rear feed dog	3.3	228 - 734 D

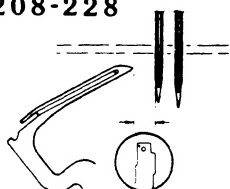


(Fig.5)

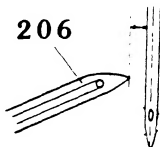
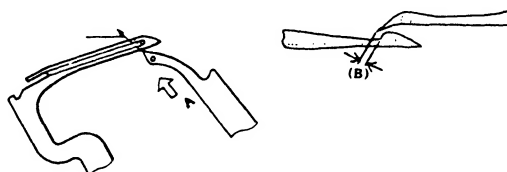
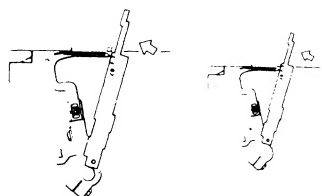
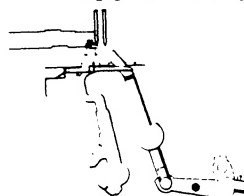
PROCEDURES TO CHECK TIMING OF NEEDLE AND LOOPERS

STEP 1 Needle heightSTEP 10 Clearance between upper/lower loopersSTEP 2 Needle distance to lower looper point

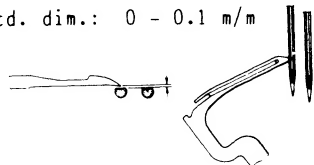
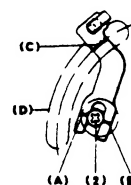
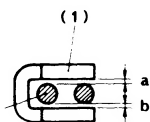
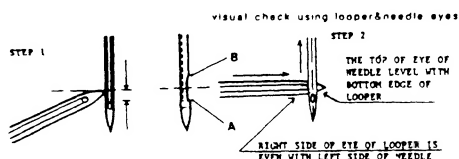
208-228



206

STEP 11 Upper looper timingSTEP 3 Lower looper heightSTEP 12 Needle distance to upper looper pointSTEP 4 Repeat Step 2.STEP 13 Repeat Step 10.STEP 5 Needle clearance to lower looper

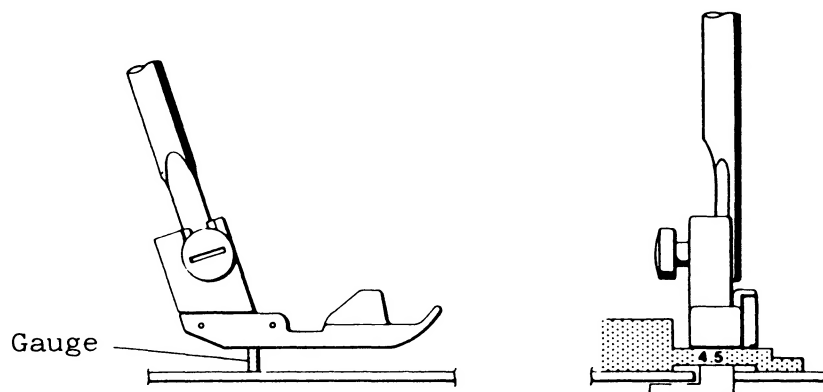
Std. dim.: 0 - 0.1 mm

STEP 14 Oscillating thread guide positionSTEP 6 Repeat Step 2.STEP 15 Sewing testSTEP 7 Needle guard positionSTEP 8 Repeat Step 5.STEP 9 Needle and lower looper timing

PRESSER FOOT HEIGHT ALL MODELS

- Checking:
1. Increase pressure and raise presser foot.
 2. Using part (3) 4.5 of multi-gauge, check clearance between needle plate and presser foot.

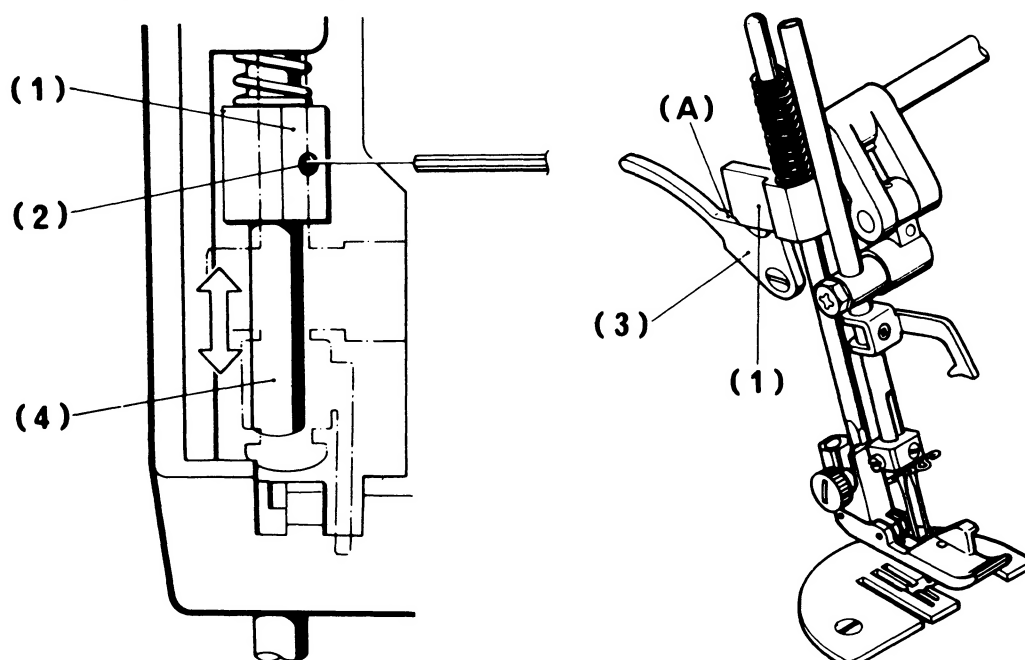
Standard dimension: 4.5 m/m



(Fig.6)

Adjustment:

1. Remove top cover, front cover and D.T. unit.
2. Under checking condition, loosen set screw (2) on the presser bar holder (1).
3. Adjust presser bar height(4) with holder (1) resting on the shoulder: (A) of release lever (3).
4. After adjustment, check presser foot direction and tighten screw (2).

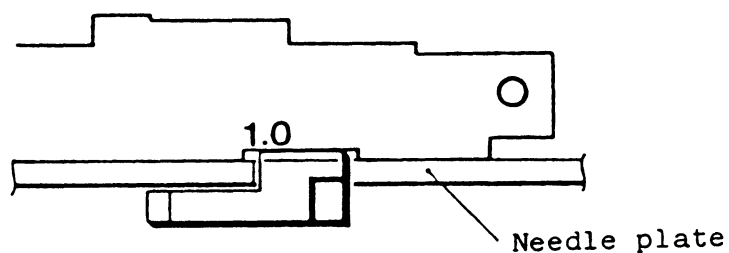


(Fig.7)

FEED DOG HEIGHT 206-208-228-734-734D

- Checking:
1. Remove presser foot.
 2. Turning hand wheel manually, bring up feed dogs at the highest position.
 3. Using part (2) 1.0 of multi-gauge, check feed dog height from needle plate surface.

Standard dimension: 1.0 mm

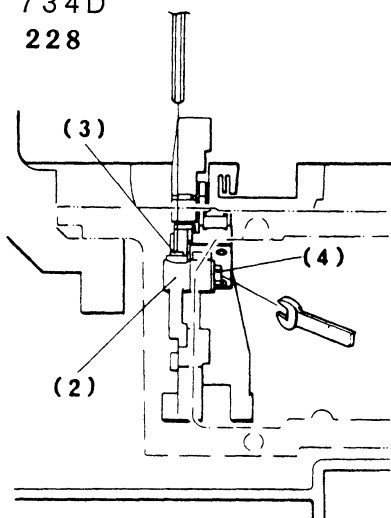


(Fig.8)

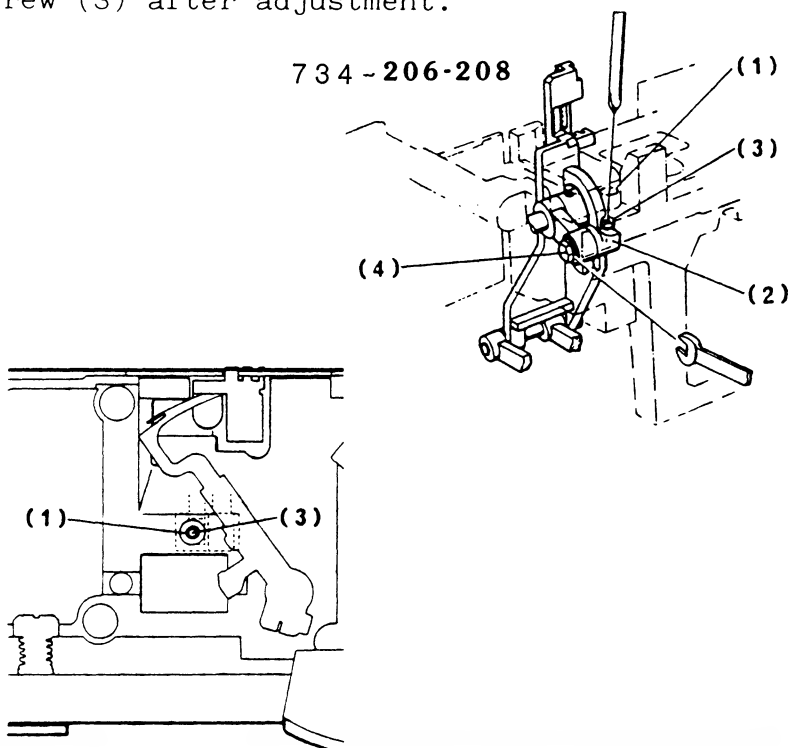
Adjustment:

1. Remove base cover.
2. Loosen set screw (3) on feed arm (2), through the base access hole (1).
3. Adjust feed dog height by turning hexagonal head pin (4).
4. Tighten set screw (3) after adjustment.

734D
228



734-206-208



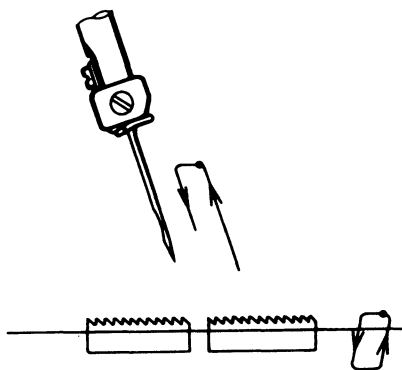
(Fig.9)

FEED DOG TIMING 206-208-228-734-734D

Feed dog timing should be checked in the sequence of its vertical motion, lateral movement, and clearance to the needle plate hole, in this order.

Vertical Motion

- Checking:
1. Set feed stroke at minimum.
 2. Turning hand wheel manually, check and see if feed dog comes up to its highest point simultaneously when needle attains to its highest position.

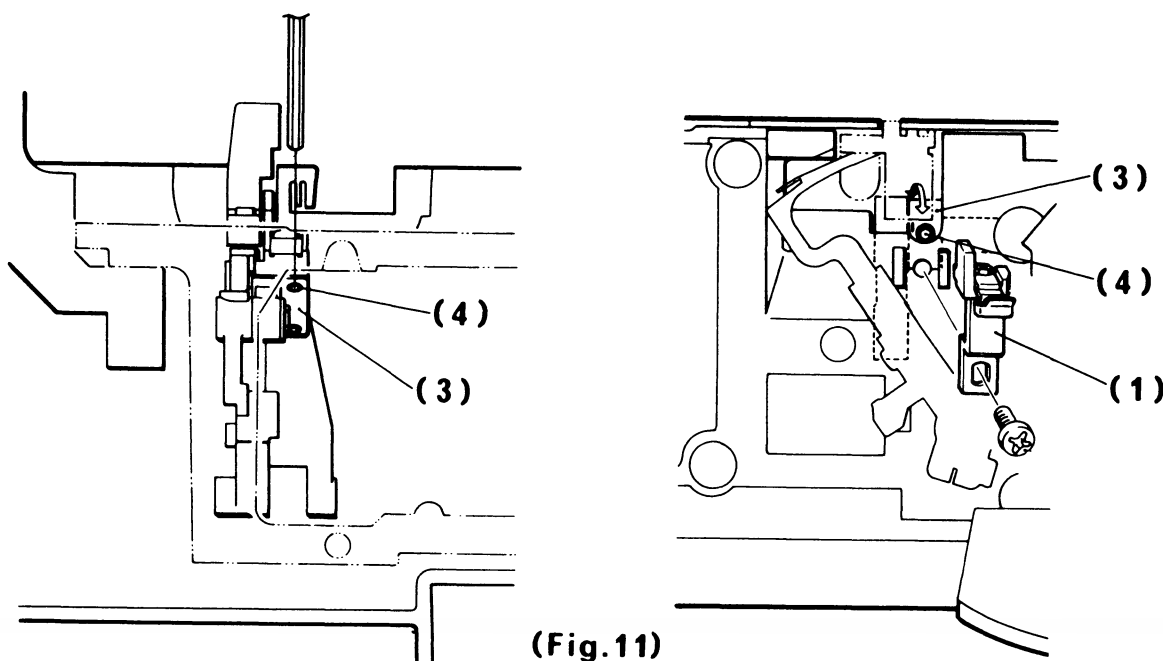


(Fig. 10)

Adjustment:

1. Remove base cover on 206-208-734.
2. Remove needle guard bracket (1) on 228-734D.
3. Loosen 2 screws (4) on eccentric feed cam (3).
4. Adjust set angle of feed cam (3) on the shaft.
5. Tighten 2 screws (4) after adjustment.

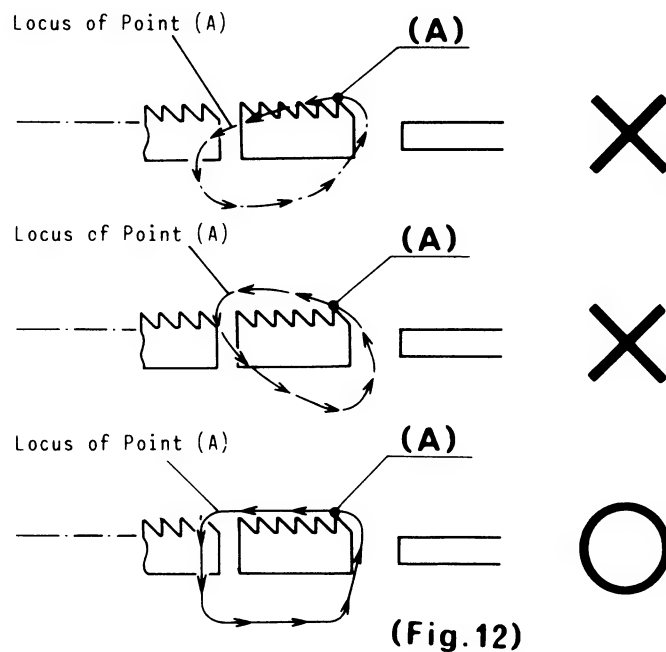
***After adjustment, check needle guard position.



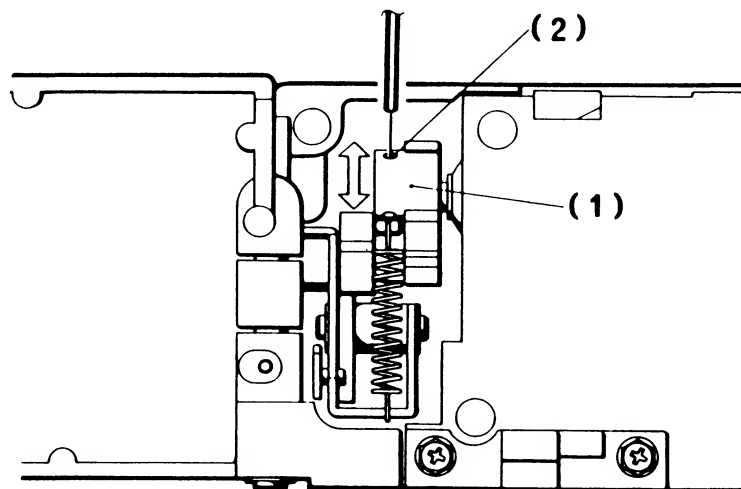
(Fig. 11)

Lateral Movement 206-208-228-734-734D

- Checking:
1. Set feed stroke at maximum.
 2. Turning hand wheel manually, check and see if lateral movement of feed dog is parallel to the needle plate surface.

Adjustment:

1. Remove base cover.
2. Loosen 2 screws (2) on lateral feed cam (1).
3. Adjust set angle of cam (1) to obtain correct movement of feed dog.
4. Tighten 2 screws (2) after adjustment.

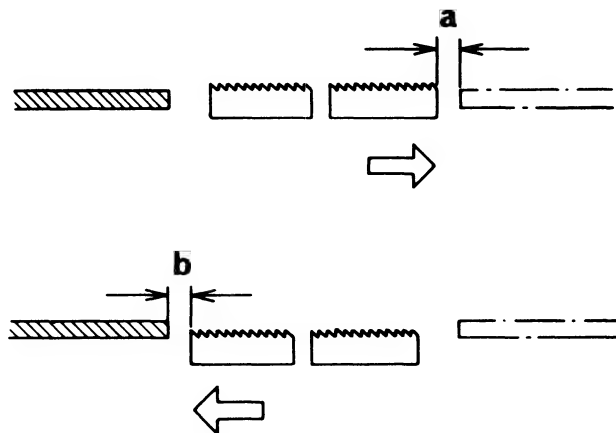


(Fig.13)

Clearance to Needle Plate Hole 206-208-228-734-734D

- Checking:
1. Set feed stroke at maximum.
 2. Turning hand wheel manually, check and see if feed dog keeps same clearance to needle plate hole at front and rear end.

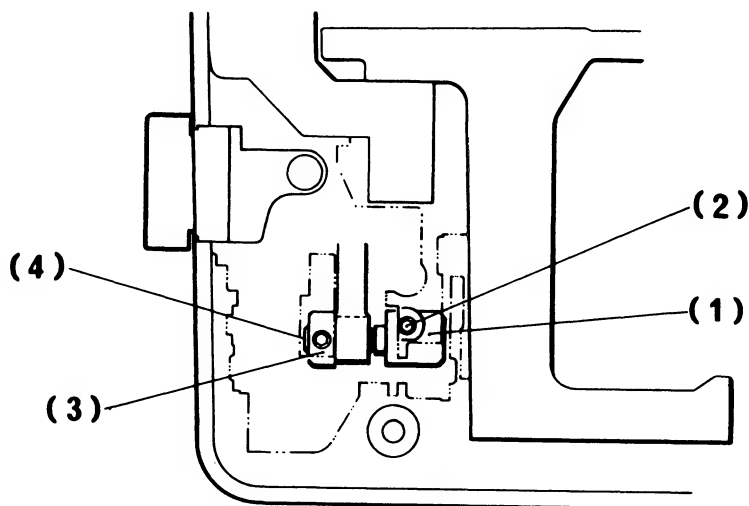
Standard: $a = b$



(Fig.14)

Adjustment:

1. Remove base cover.
2. Loosen set screw (2) on feed link (1).
3. Turning eccentric pin (4) at collar (3), adjust position of feed dog correctly.
4. Tighten screw (2) after adjustment.



(Fig.15)

NEEDLE HEIGHT 206-208-228-734-734D

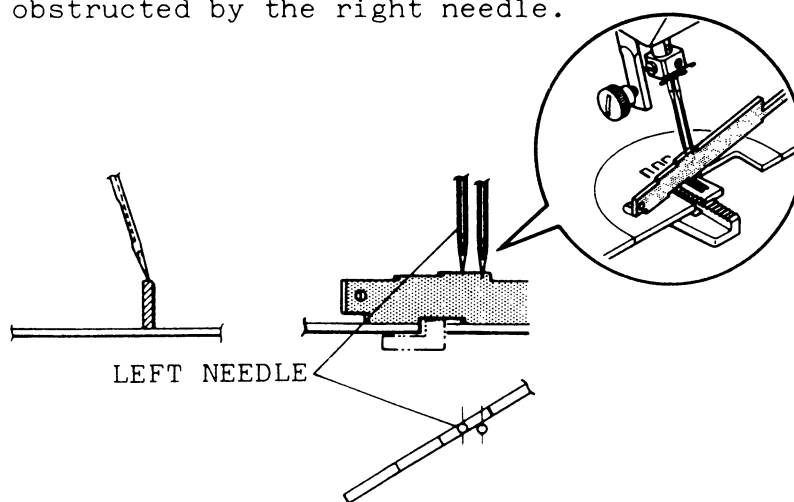
- * The checking must be carried out on the left needle. (208-228)
(734-734D)

Checking:

1. Remove presser foot.
2. Set needle (#14 "HA x 1SP") correctly in position.
3. Turning hand wheel, bring up needle at highest point.
4. Check height of left needle point from needle plate surface, with part (1) 11.2 of multi-gauge.

Standard dimension: 11.2 mm

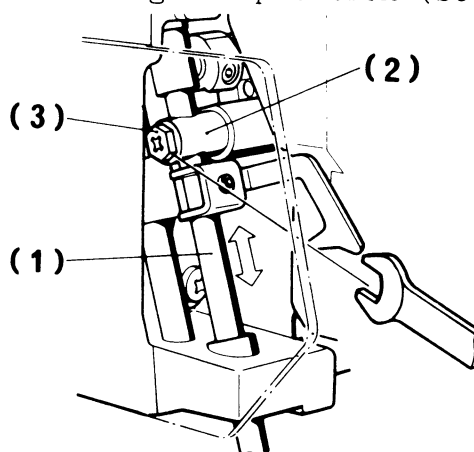
- * Apply the gauge slantwise as illustrated so as not to be obstructed by the right needle.



(Fig.16)

Adjustment:

1. Remove front cover.
2. Set needle bar (1) at its highest position.
3. Loosen screw (3) on needle bar clamp (2), and adjust needle bar height to the standard dimension.
4. Tighten screw (3) after adjustment.
5. Check upper thread guide position (See next page.).



(Fig.17)

Position of Upper Thread Guide 206-208-228-734-734D

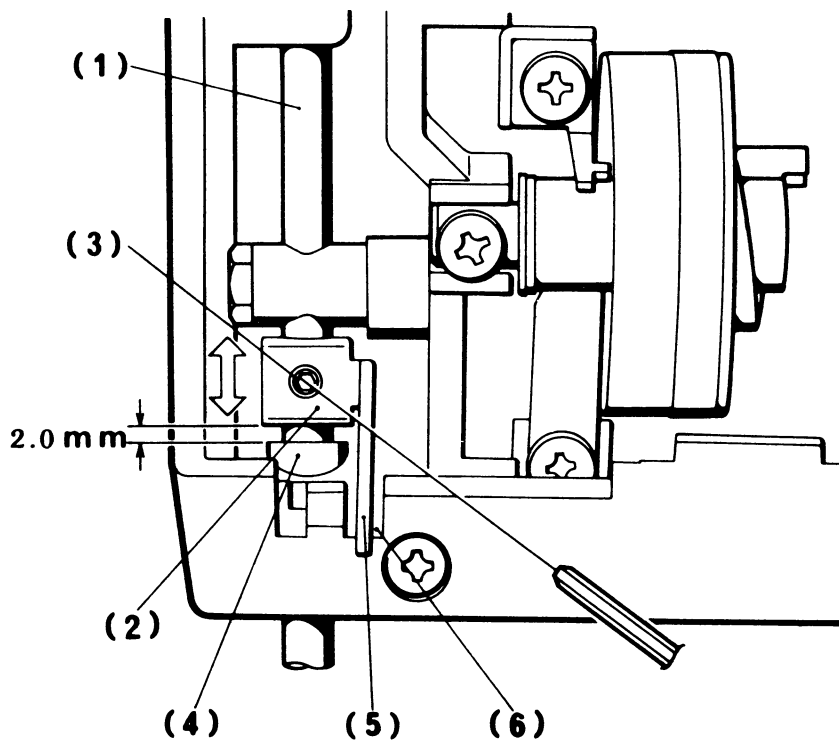
- Checking:
1. Set needle bar (1) at its lowest position while adjusting needle height.
 2. Observe clearance between upper thread guide (2) and bush (4) on the base.

Standard dimension: 2.0 mm

See illustration below.

Adjustment:

1. Under checking condition, loosen screw (3) on upper thread guide.
2. Adjust position of upper thread guide (2) and tighten screw (3), in the way that finger tip (5) of thread guide comes to the center of base cutout (6).

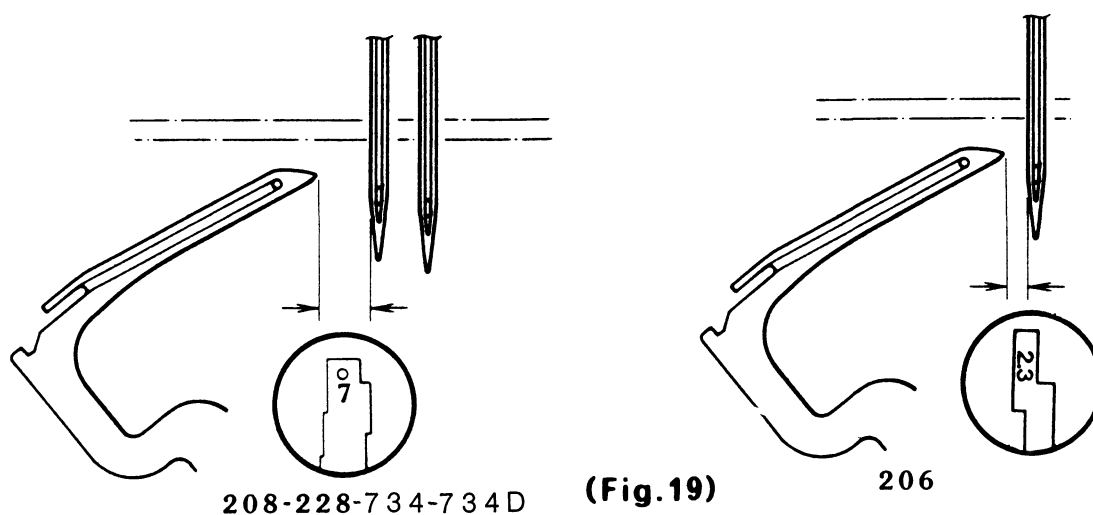


(Fig.18)

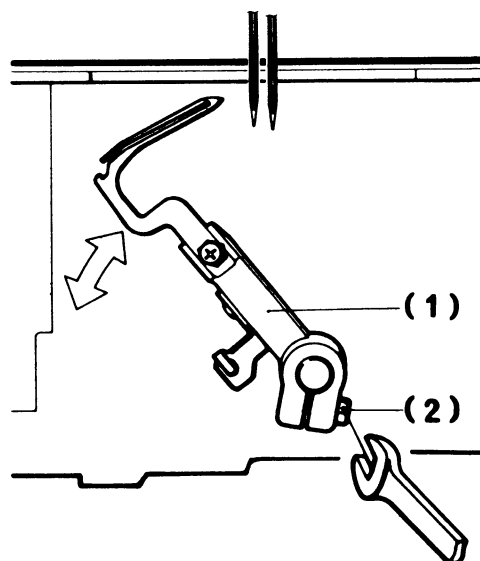
NEEDLE DISTANCE TO LOWER LOOPER POINT 206-208-228-734-734D

- Checking:
1. Remove presser foot and needle plate.
 2. Turning hand wheel, move lower looper to its extreme left end position.
 3. Check needle distance to lower looper point by using multi-gauge.

Standard dimension: 7.0 m/m 208-228-734-734D
2.3 m/m 206

Adjustment:

1. Under checking condition, loosen bolt (2) on lower looper support arm (1).
2. Adjust set angle of support arm (1) to obtain standard dimension, keeping its axlewise position on shaft.
3. Tighten bolt (2) after adjustment.



(Fig.20)

LOWER LOOPER HEIGHT 228-734D

Checking:

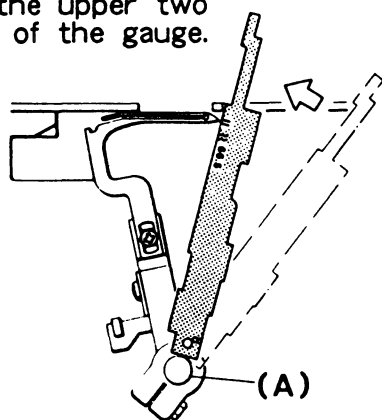
1. Check looper height with new type gauge 7264.

Standard dimension; $66.5\text{mm} \begin{smallmatrix} +.5 \\ -0 \end{smallmatrix}$

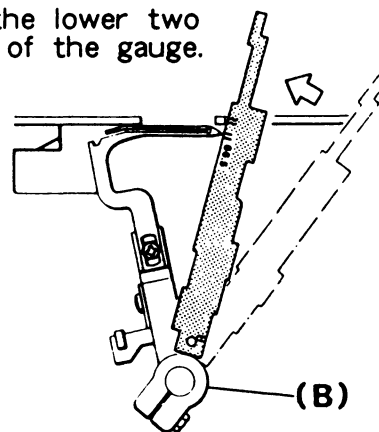
- * Place the gauge on the shaft (A) or lower looper supporting arm (B) and apply it to the tip of the lower looper as illustrated. Check to see if the tip of the lower looper coincides with the area between two scales.

NOTE: When using metric scale, subtract 4 m/m from scale reading to allow for shaft difference.

Read the upper two scales of the gauge.



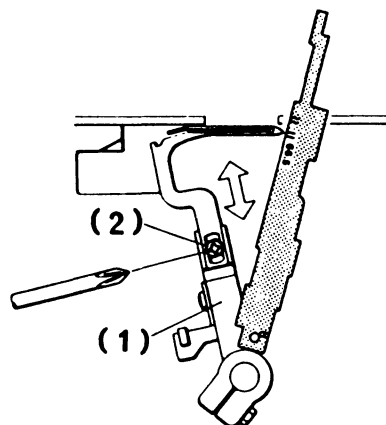
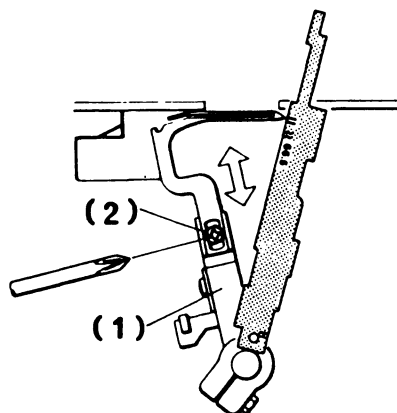
Read the lower two scales of the gauge.



(Fig.21)

Adjustment:

1. Under the checking condition, loosen set screw (2) on looper support arm (1).
2. Adjust vertical position of lower looper.
3. Tighten screw (2) after adjustment.



(Fig.22)

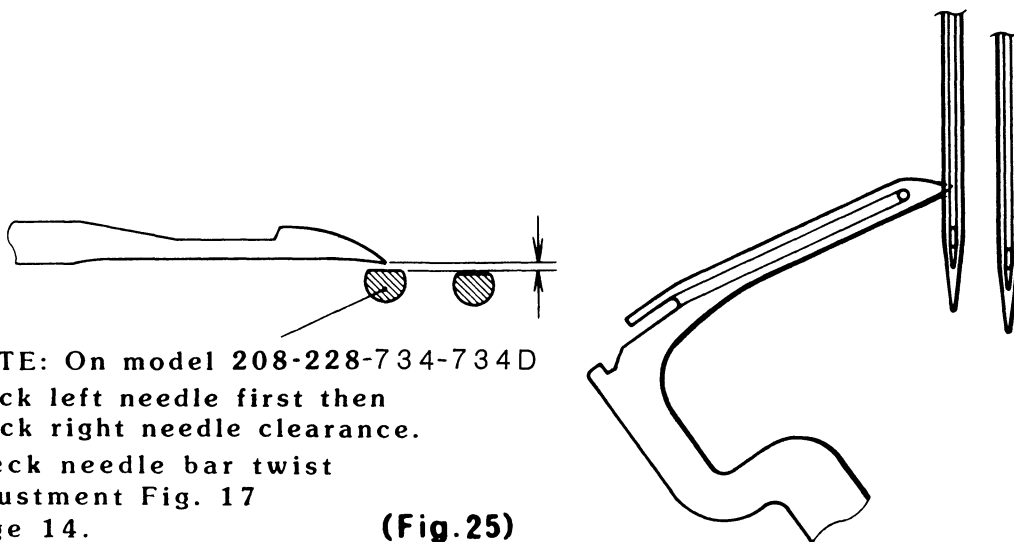
NEEDLE CLEARANCE TO LOWER LOOPER 206-208-228-734-734D

NOTE: When checking 206 you will only have one needle.

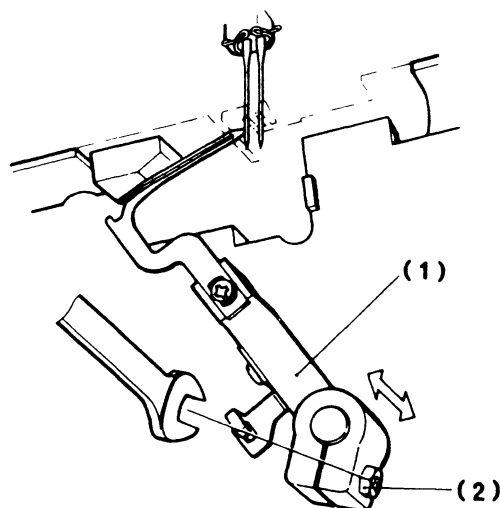
Checking (1):

1. Remove presser foot and needle plate.
2. Turning hand wheel, move lower looper point to come to the center line of the needle, and check clearance between needle and lower looper.

Standard dimension: 0 - 0.1 mm

Adjustment (1):

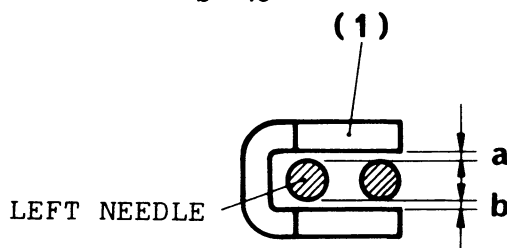
1. Under checking condition, loosen bolt (2) on lower looper support arm (1).
2. Keeping the set angle, make axleside adjustment of support arm (1).
3. Tighten bolt (2) after adjustment.



NEEDLE GUARD POSITION 206-208-228-734-734D

Checking: 1. Move needle to its lowest position.

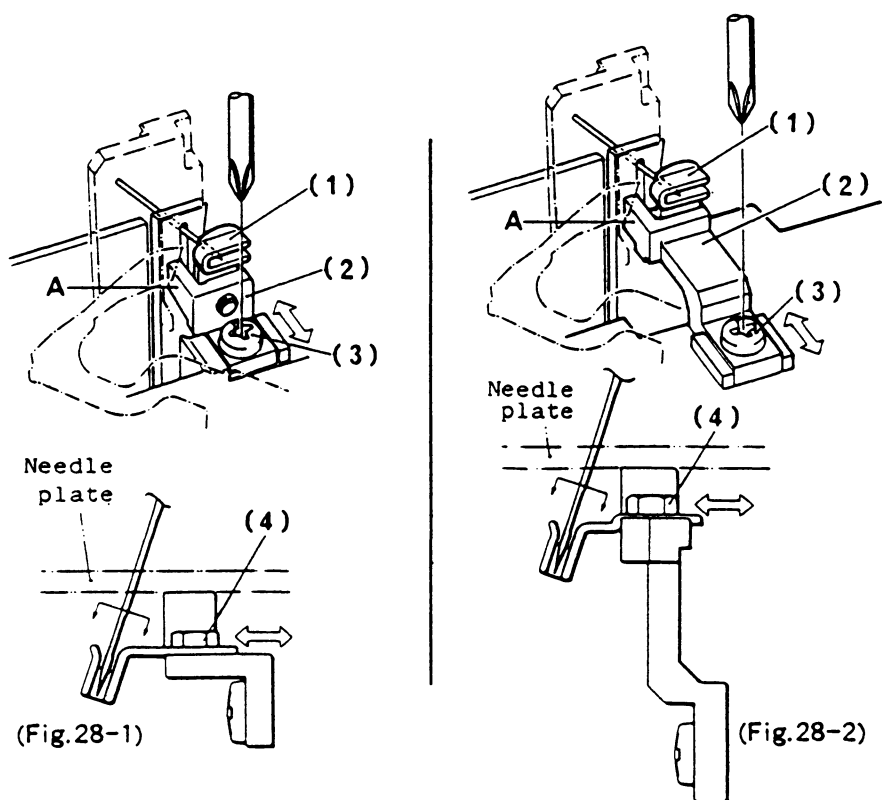
Standard: a - .4
b - .6



(Fig. 27)

Adjustment:

1. Loosen screw (3) on needle guard bracket (2), push up bracket arm (A) against under surface of needle plate, and tighten screw (3).
2. Remove needle plate. Loosen screw (4) on needle guard, adjust position of guard, and tighten screw (4).

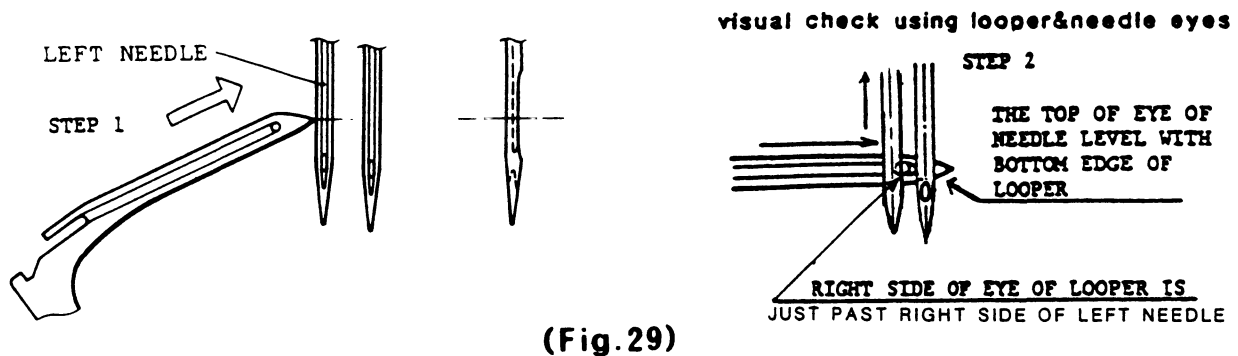


(Fig. 28)

NEEDLE AND LOWER LOOPER TIMING 206-208-228-734-734D

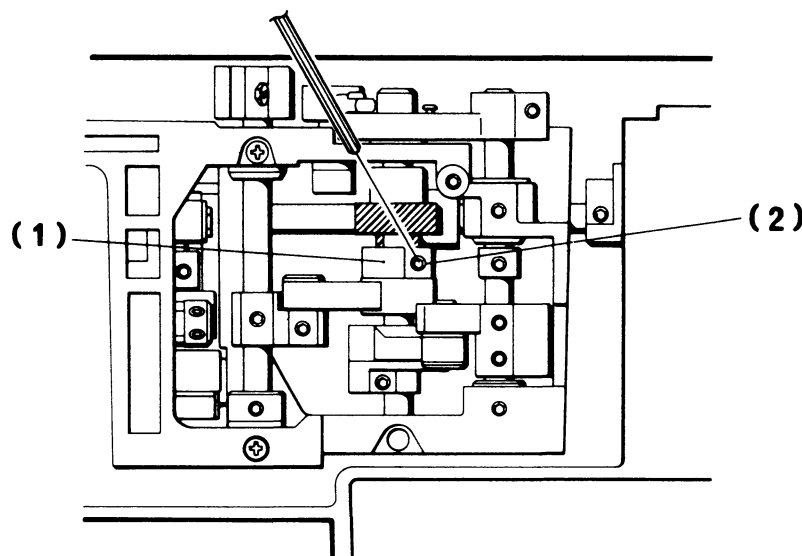
Before proceeding, check needle distance to lower looper point according to **page 16**.

- Checking:
1. Turning hand wheel manually, move lower looper point to align with left side of left needle.
 2. At this point, check if looper point comes in the center of the cut on the back of needle.



Adjustment:

1. Remove base cover
2. Loosen 2 screws (2) on eccentric cam (1).
3. Adjust set angle of cam (1) to obtain correct timing.
4. Tighten 2 screws (2) after adjustment.



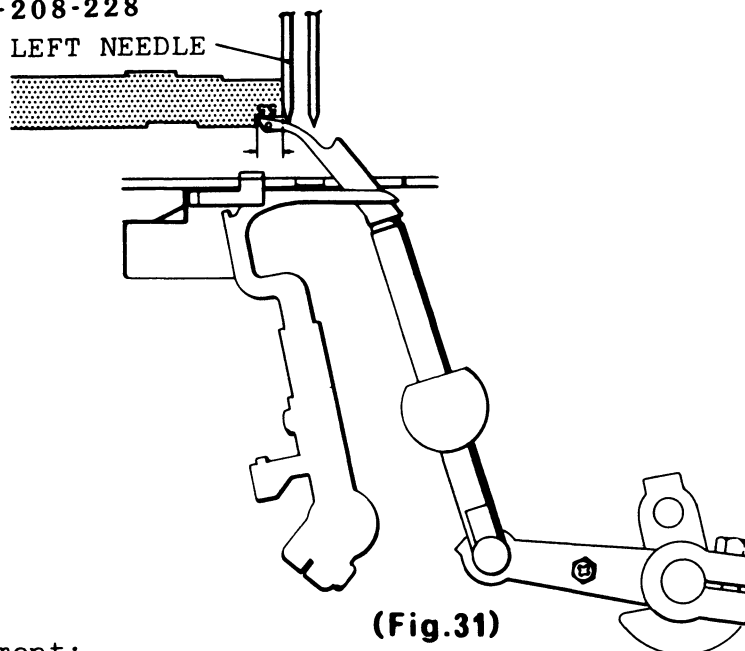
(Fig.30)

NEEDLE DISTANCE TO UPPER LOOPER POINT 206-208-228-734-734D

* The checking must be carried out on the left needle.

- Checking:
1. Turning hand wheel, move upper looper to its extreme left end position.
 2. Using part (6) 5.5 of multi-gauge, check the needle distance to the looper point.

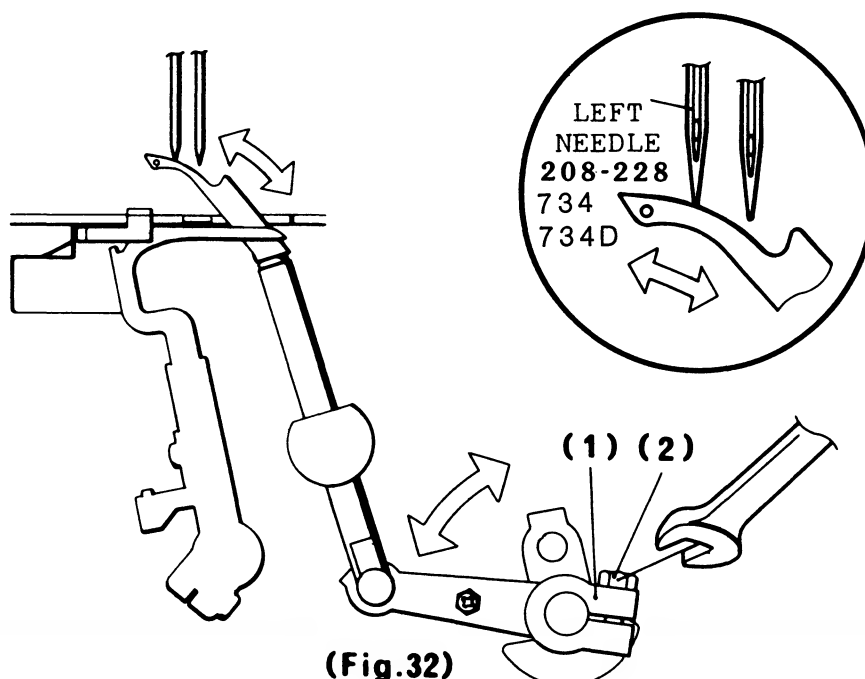
734-734D-208-228



(Fig.31)

Adjustment:

1. Loosen set screw (2) on support arm (1).
2. Adjust set angle of the arm (1) to the standard.
3. Tighten screw (2) after adjustment.

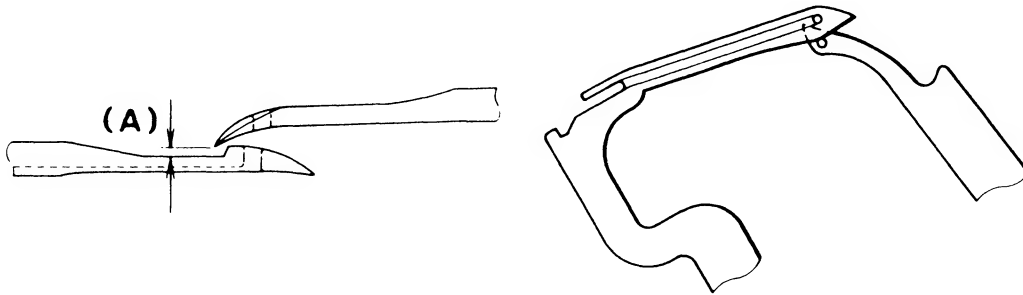


(Fig.32)

CLEARANCE BETWEEN UPPER AND LOWER LOOPERS 206-208-228-734
734D

- Checking:
1. Turning hand wheel, bring upper looper point to the close proximity to lower looper.
 2. Check clearance (A) between upper and lower looper.

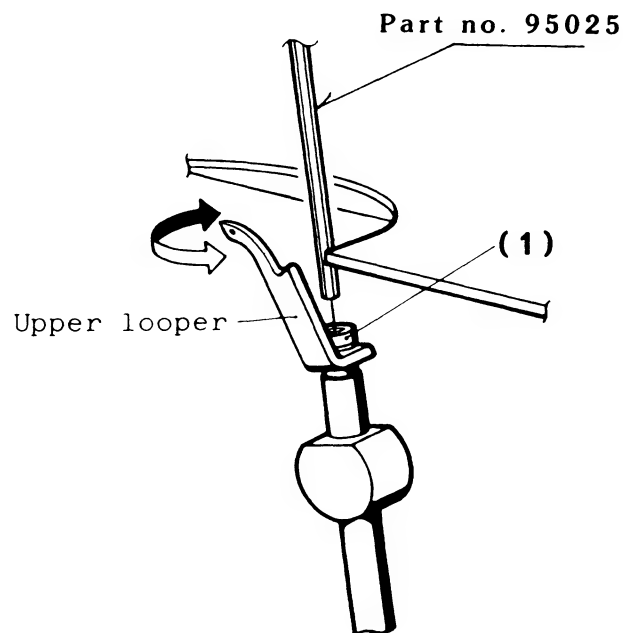
Standard dimension: A = 0 - 0.1 mm



(Fig.33)

Adjustment:

1. Remove presser foot and needle plate.
2. Loosen set screw (1) on upper looper.
3. Adjust set angle of upper looper to obtain standard clearance (A) between two loopers.
4. Tighten set screw (1) after adjustment.

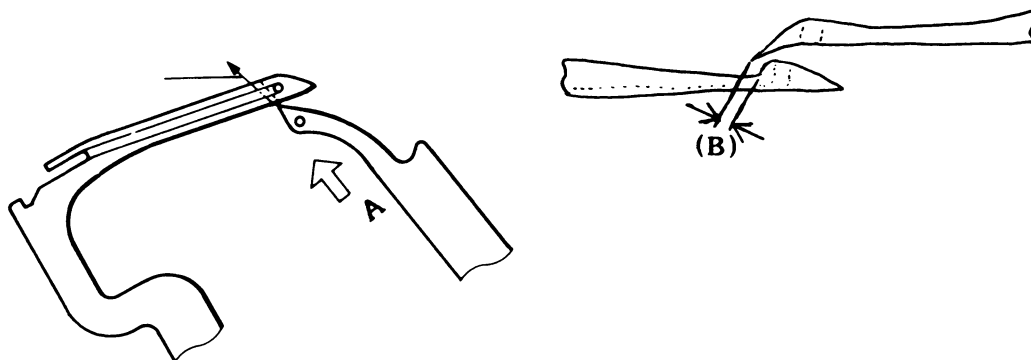


(Fig.34)

UPPER LOOPER TIMING 206-208-228-734-734D

- Checking:
1. Turning hand wheel, bring upper looper point to align with lower edge of lower looper (Fig.35).
 2. Check clearance (B) between upper and lower loopers as viewed in arrow (A) direction.

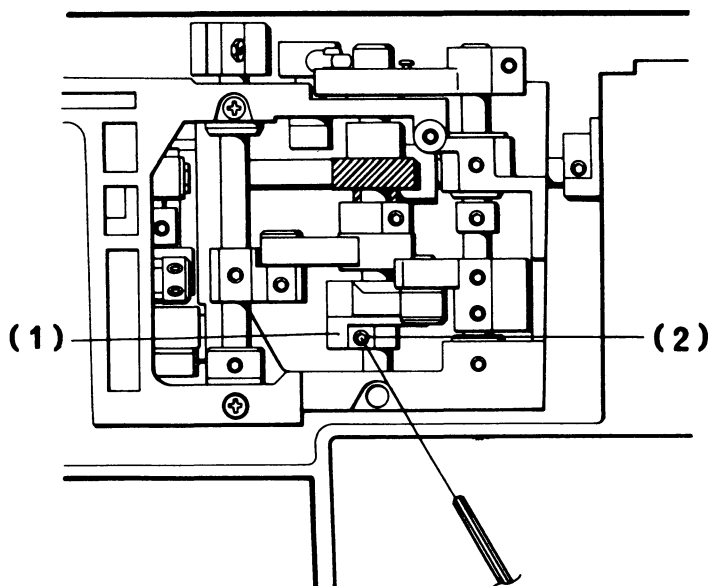
Standard dimension: $B = 0.5 - 1.5 \text{ mm}$



(Fig.35)

Adjustment:

1. Remove base cover.
2. Loosen 2 set screws (2) on eccentric cam (1).
3. Adjust set angle of cam (1) to obtain standard clearance.
4. Tighten 2 screws (2) after adjustment.



(Fig.36)

LOWER LOOPER HEIGHT 206-208-734

Checking:

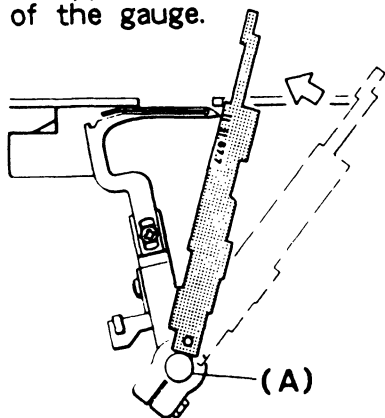
1. Check looper height with new type gauge 7263.

Standard dimension; 67.7mm $\pm .3$

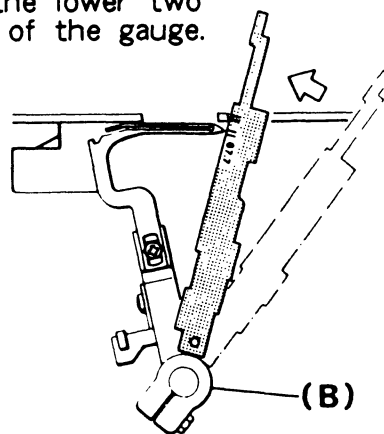
- * Place the gauge on the shaft (A) or lower looper supporting arm (B) and apply it to the tip of the lower looper as illustrated. Check to see if the tip of the lower looper coincides with the area between two scales.

NOTE: When using metric scale, subtract 4 m/m from scale reading to allow for shaft difference.

Read the upper two scales of the gauge.



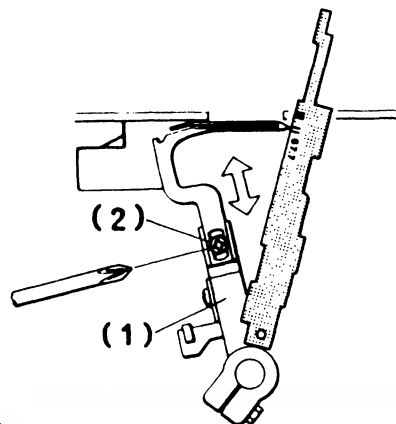
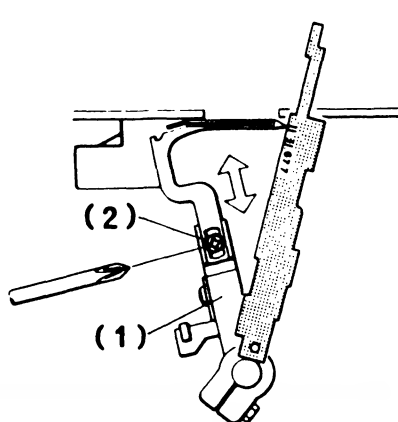
Read the lower two scales of the gauge.



(Fig.21)

Adjustment:

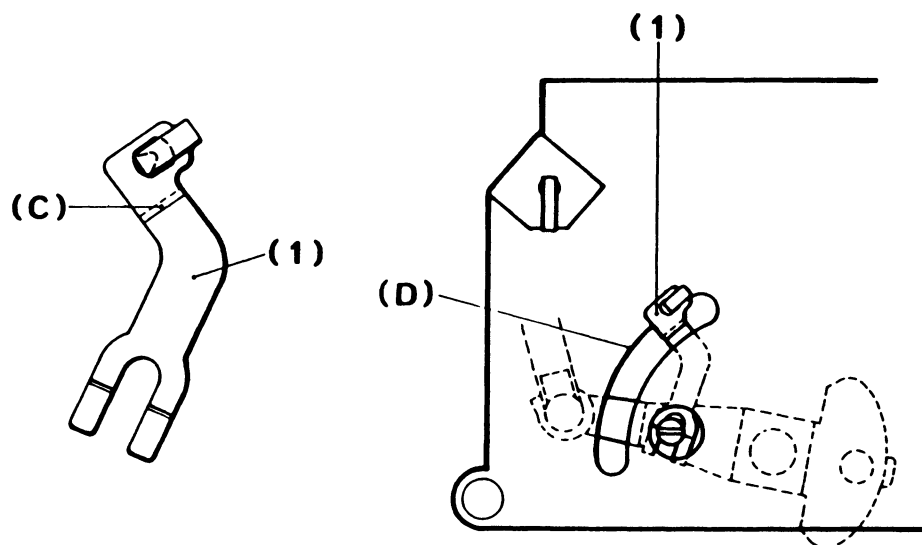
1. Under the checking condition, loosen set screw (2) on looper support arm (1).
2. Adjust vertical position of lower looper.
3. Tighten screw (2) after adjustment.



(Fig.22)

OSCILATING THREAD GUIDE POSITION 206-208-228

- Checking:
1. Turning hand wheel, bring the oscilating thread guide (1) to the visible area.
 2. Check and see if the oscilating thread guide (1) is positioned as illustrated.

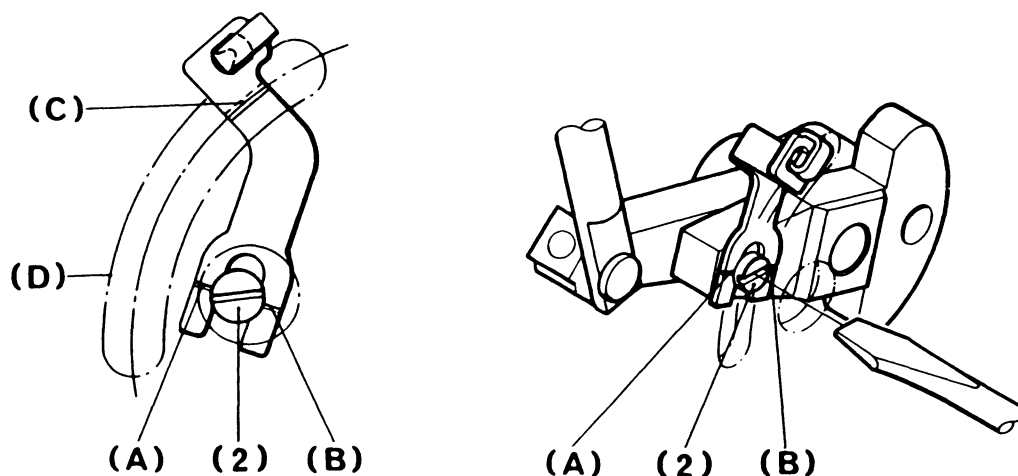


(Fig.38)

Adjustment:

1. Loosen screw (2) and adjust position of thread guide so that engraved marks (A) and (B) align with the center of screw (2). Tighten screw (2) after adjustment.

** The bent ear (C) of thread guide should run along the center arc of arcuate hole (D). ***

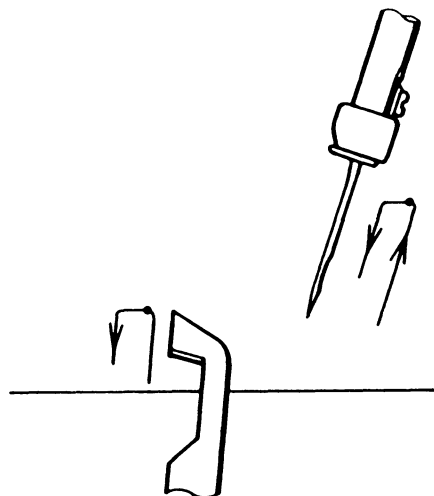


(Fig.39)

UPPER CUTTER TIMING 206-208-228-734-734D

Checking:

1. Turning hand wheel slowly by hand, observe movement of needle and upper cutter, if they are synchronized.
2. When needle starts its down stroke, so does upper cutter.

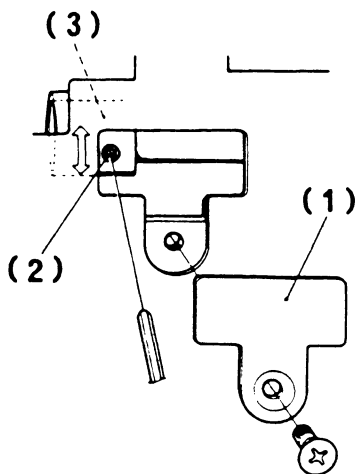


(Fig.46)

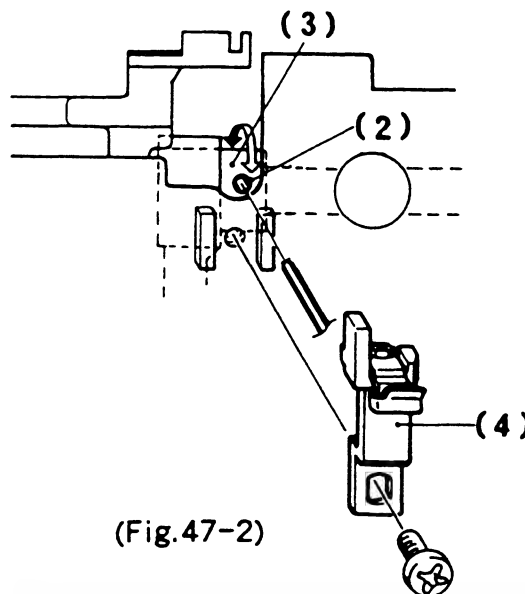
Adjustment:

1. Remove access hole cover (1) illustrated in fig. 47-1.
Remove needle shoe bracket (4) illustrated in fig. 47-2.
2. Loosen 2 set screws (2) on eccentric cam (3).
** Left side cam is for the upper cutter. **
3. Adjust set angle of cam (3) to obtain correct timing.
4. Tighten set screws (2) positively after adjustment.

***After adjustment, check needle guard position.



(Fig.47-1)



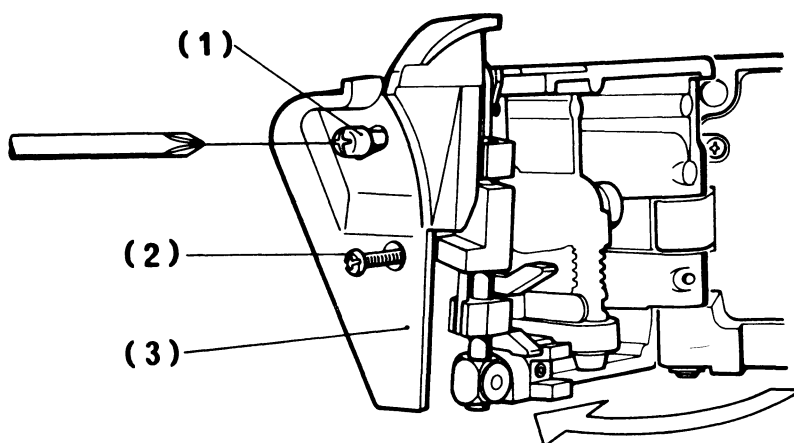
(Fig.47-2)

(Fig.47)

REPLACING CUTTERS 206-208-228-734-734D

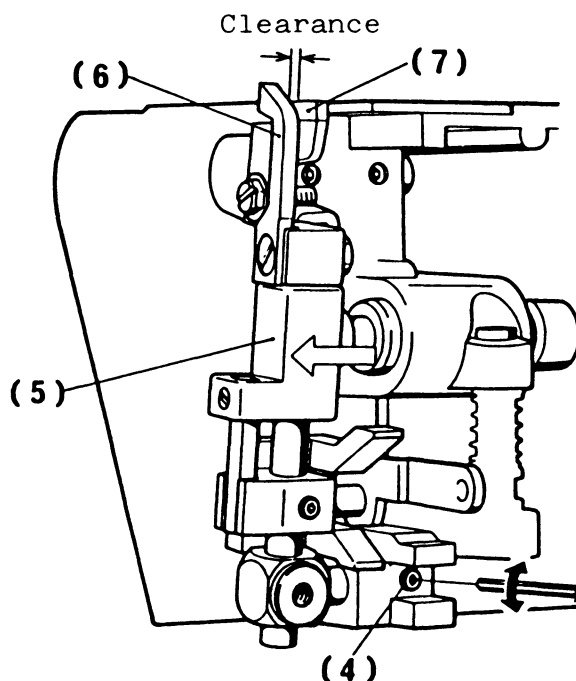
Preparations:

1. Open side cover (cutting unit block).
2. Remove knob (1) with screwdriver.
3. Remove screw (2) and take off side plate (3).



(Fig.48)

4. Loosen set screw (4). Move upper cutter holding unit (5) in the arrow direction, and make a side clearance between upper cutter (6) and lower cutter (7). Set the unit temporarily at this position with screw (4).

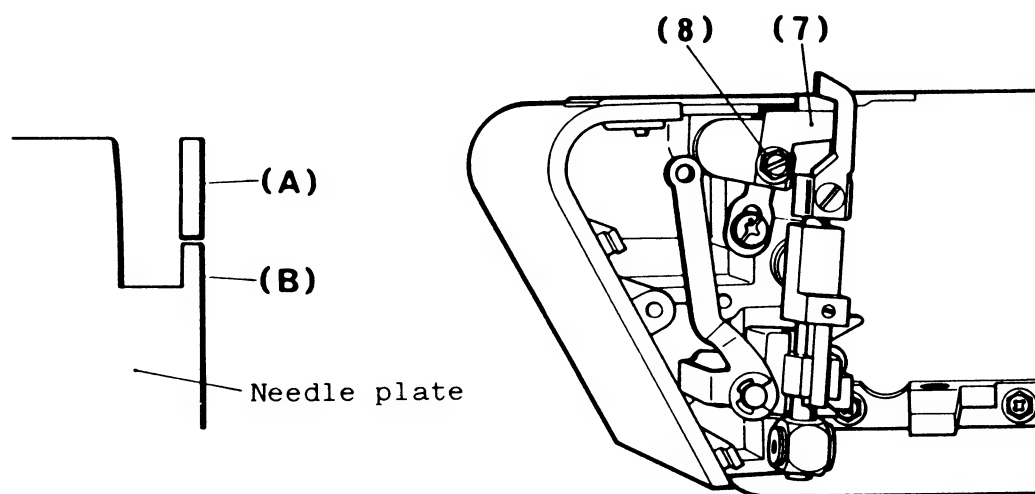


(Fig.49)

REPLACEMENT OF CUTTERS CONT'D

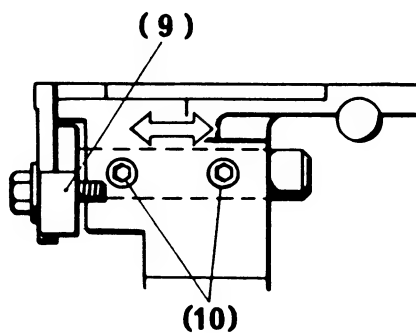
Replacing Lower Cutter:

1. Remove set screw (8) and replace lower cutter (7).
2. Set new cutter (7) temporarily with screw (8).
3. Check and see if sides of lower cutter (A) and needle plate (B) come in alignment as illustrated.



(Fig.50)

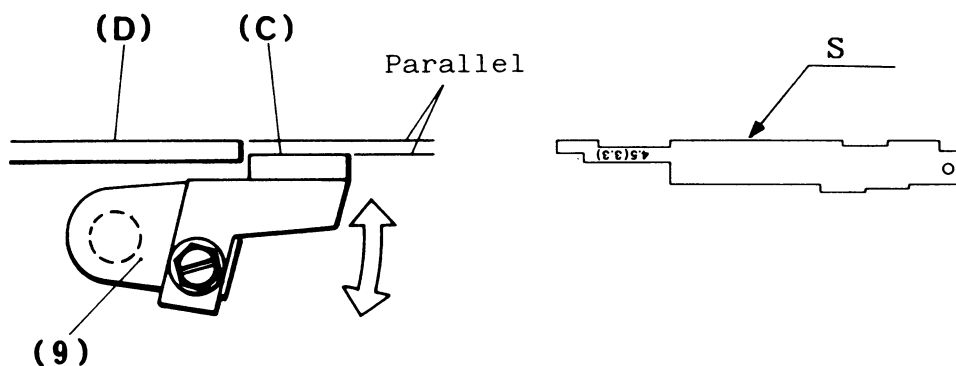
If not, loosen 2 set screws (10) for lower cutter holding unit (9), and adjust position of the unit (9) in the arrow directions. Set 2 screws (10) temporarily after adjustment.



(Fig.51)

REPLACEMENT OF CUTTERS CONT'D

4. Check and see if the blade of lower cutter (C) is parallel with upper surface of needle plate (D).
Use part S of multi-gauge for the purpose, as illustrated.

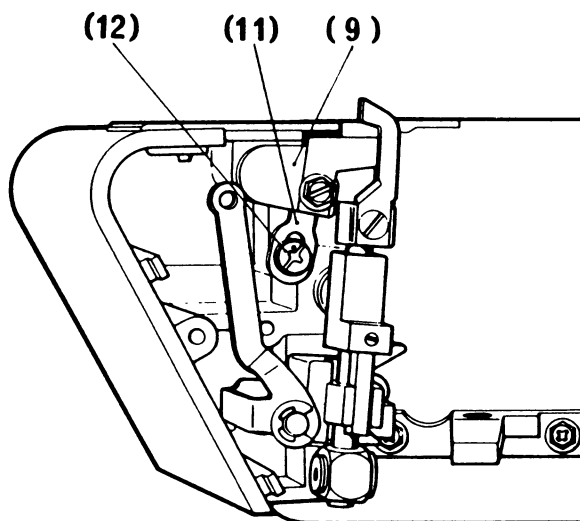


(Fig. 52)

If they are not in good alignment, loosen set screw (12) for lower cutter stopper (11). (Fig. 53)
Loosen 2 set screws (10) for lower cutter holder (9), (See Fig. 51.), and adjust position of lower cutter in the arrow directions (Fig. 52), to obtain parallel alignment of lower cutter blade (C) and needle plate surface (D).

Note: While adjustment, position of lower cutter holder (9) as adjusted in Step 3, should be kept unchanged.

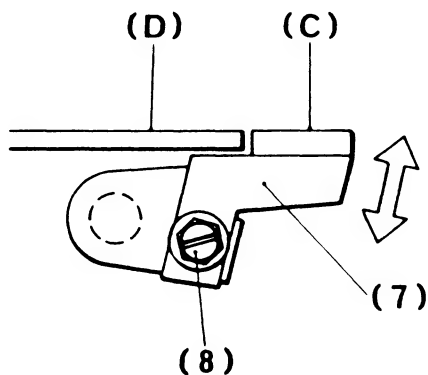
After adjustment, securely tighten 2 set screws (10) for the lower cutter holder (9). (See Fig. 51.)



(Fig. 53)

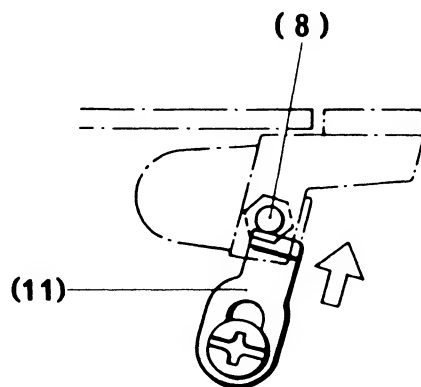
REPLACEMENT OF CUTTERS CONT'D

5. Loosen set screw (8) of lower cutter (7), and adjust cutter position up or down so that its blade (C) comes to level off with upper surface of needle plate (D).
6. Tighten set screw (8) securely after adjustment.



(Fig. 54)

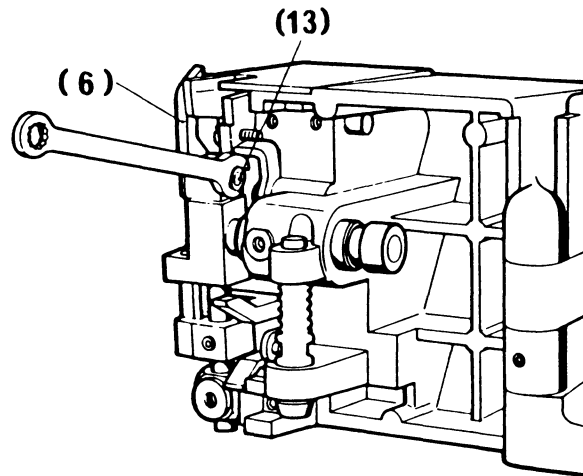
7. Push up lower cutter stopper (11) against set screw (8) of the cutter, and tighten set screw of stopper (11).



(Fig. 55)

Replacing Upper Cutter

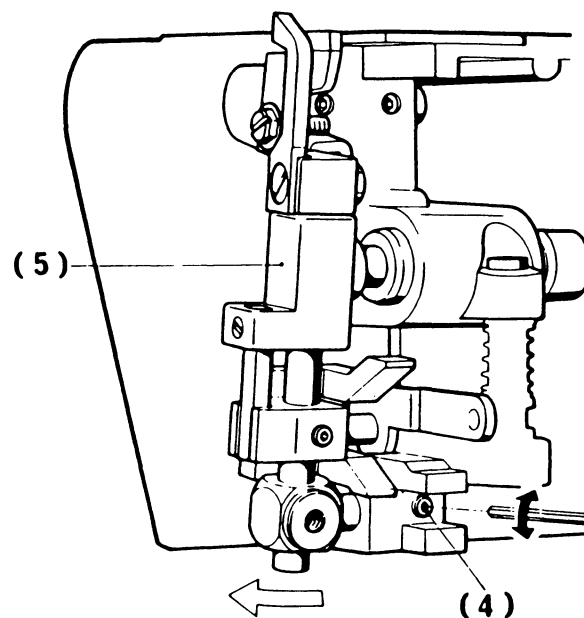
1. Remove setting nut (13) of upper cutter (6) with spanner and replace upper cutter (6) with new one.
2. Tighten nut (13) securely after replacement.



(Fig.56)

Checking after replacement:

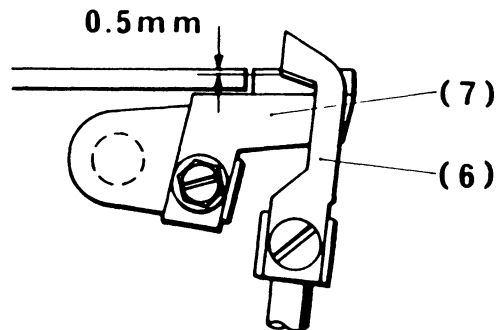
1. Loosen set screw (4), and upper cutter holding unit (5), which is resiliently held, will swing back.
2. Pulling upper cutter holding unit (5) slightly forward, tighten screw (4) securely.



(Fig.57)

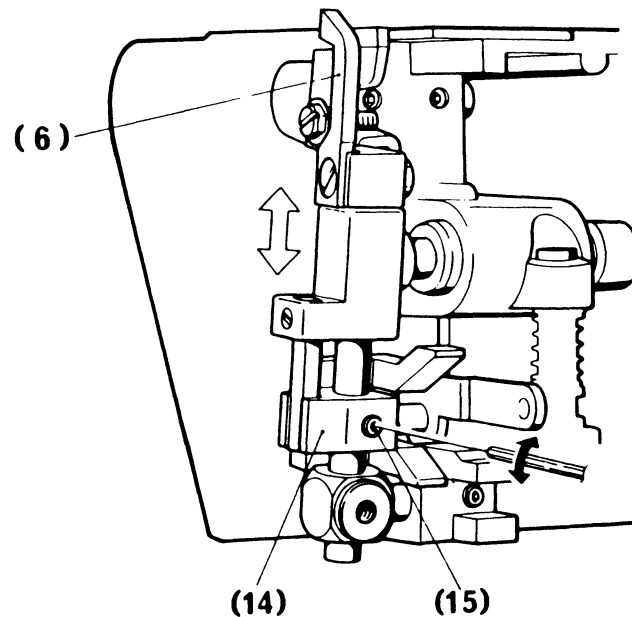
REPLACEMENT OF CUTTERS CONT'D

3. Close side cover (cutting unit block) to the machine, and bring upper cutter (6) to its lowest position by turning hand wheel by hand.



(Fig.58)

4. Check and see if blades of lower cutter (7) and upper cutter (6) overlap by 0.5 m/m as the side view in Fig.58. If not, loosen screw (15) of forked guide block (14) and adjust vertical position of upper cutter (6). Tighten screw (15) securely after adjustment.

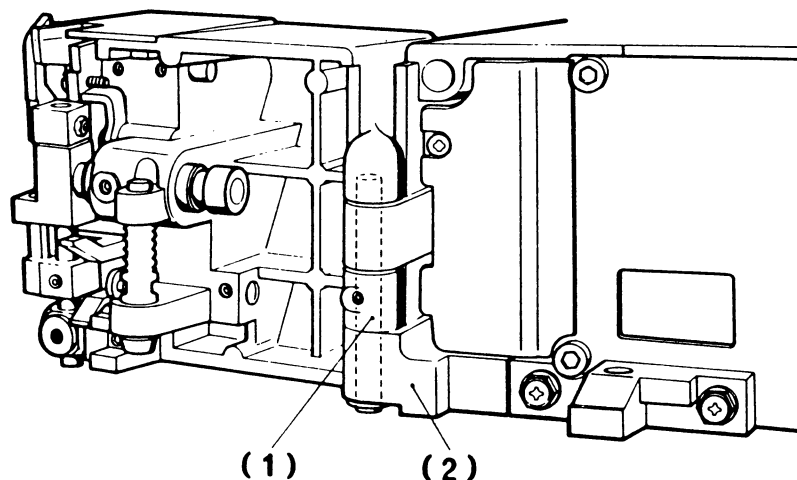


(Fig.59)

POSITIONING OF CUTTING UNIT

Checking:

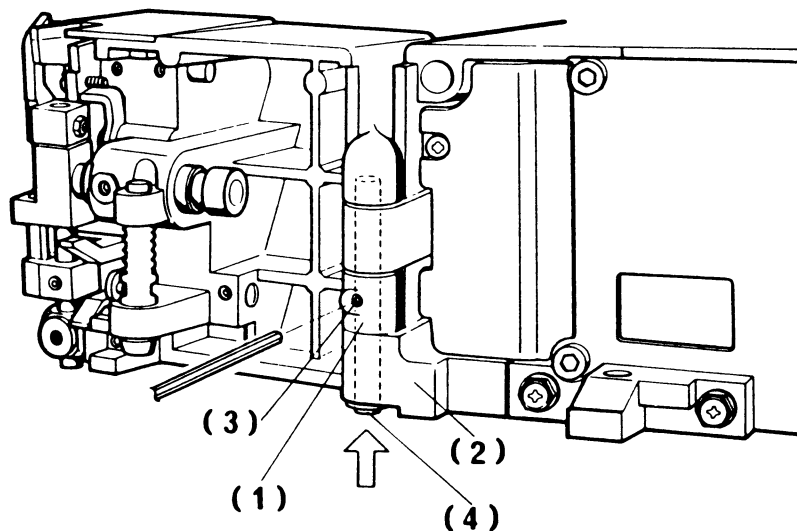
1. Check and see if there is any vertical play among hinge bushing (1) of side cover (cutting unit block) and those of bed frame (2).



(Fig.60)

Adjustment:

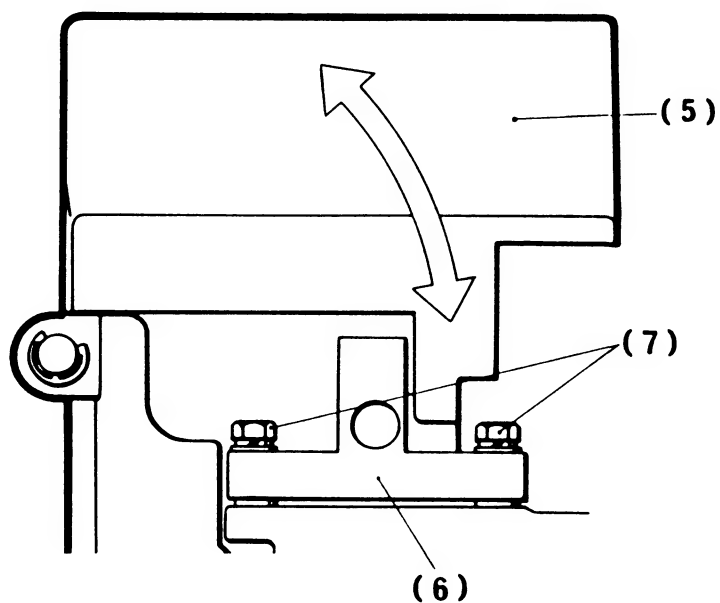
1. Loosen set screw.
2. While pressing hinge bushing (1) of cutting unit against bushings (2) of bed frame and pushing up spindle (4) at the same time, tighten set screw (3) temporarily.
3. Tighten up set screw (3) only when there is no vertical play among hinge bushing of side cover and those of bed frame.



(Fig.61)

POSITIONING OF CUTTING UNIT CONT'D

4. Loosen 2 bolts (7) of guide block (6) for side cover (5).
5. Close side cover (5).
6. Under this condition, secure guide block (6) by tightening 2 bolts (7).
7. Check smooth function of side cover when opening and closing.



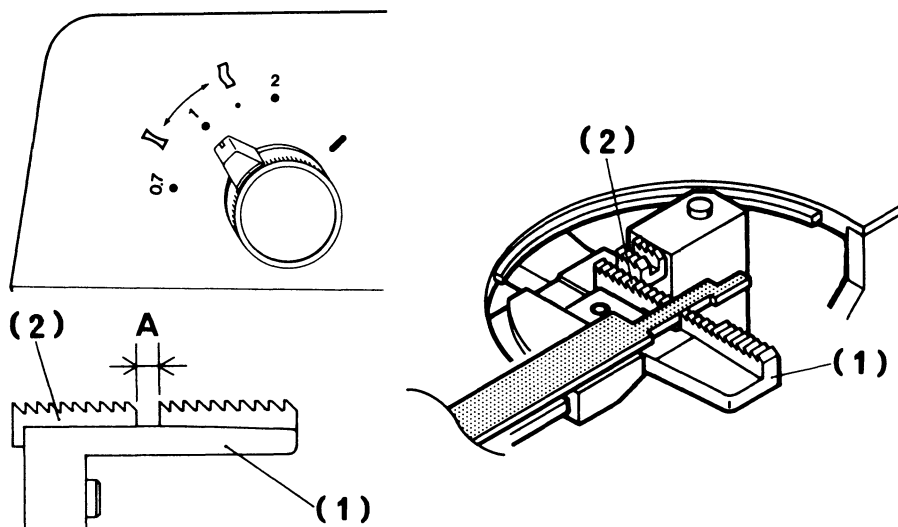
(Fig.62)

CLEARANCE BETWEEN FRONT FEED DOG AND REAR FEED DOG 228-734D

Checking:

1. Remove needle plate.
2. Set differential feed control lever at "1".
3. Observe clearance between front feed dog and rear feed dog by using gauge (7) 3.3.

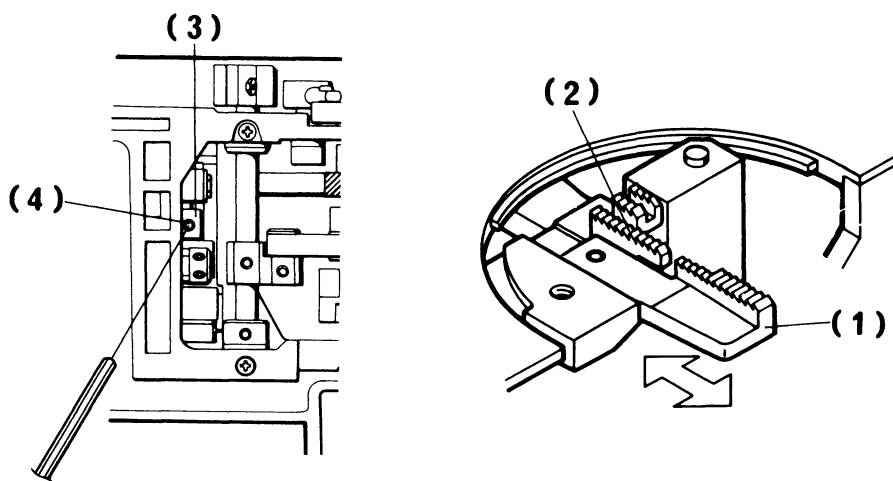
Standard dimension: 3.3 m/m



(Fig.63)

Adjustment:

1. Loosen set screw (4) on feed dog holder (3).
2. Adjust by moving front feed dog so that clearance between front feed dog and rear feed dog is 3.3 m/m.
3. Tighten set screw (4) after adjustment.

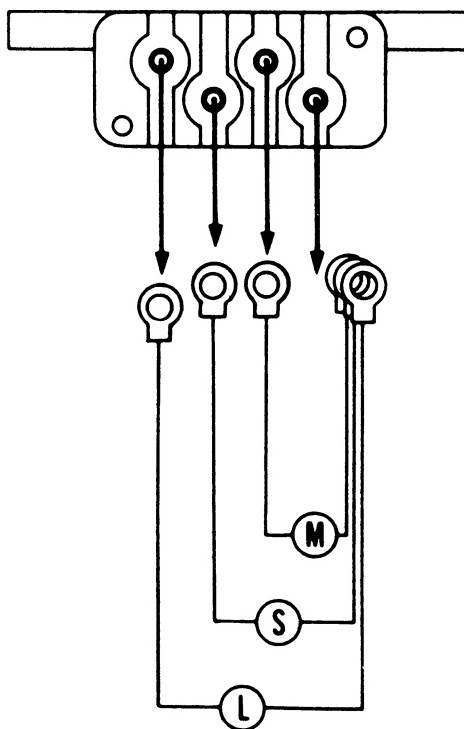
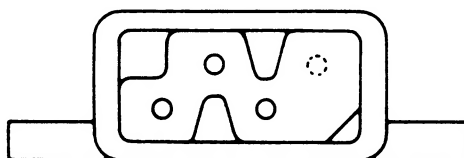


(Fig.64)

CONNECTION DIAGRAM

WIRING TO TERMINAL BLOCK

M : Motor
S : Switch
L : Lamp

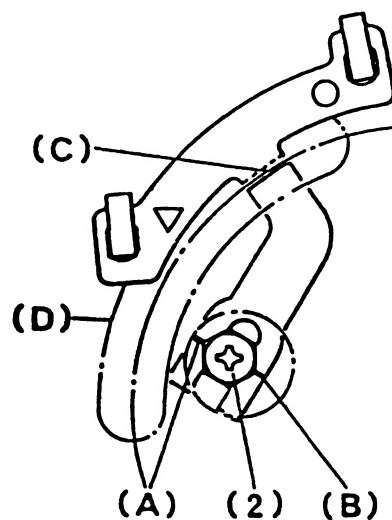
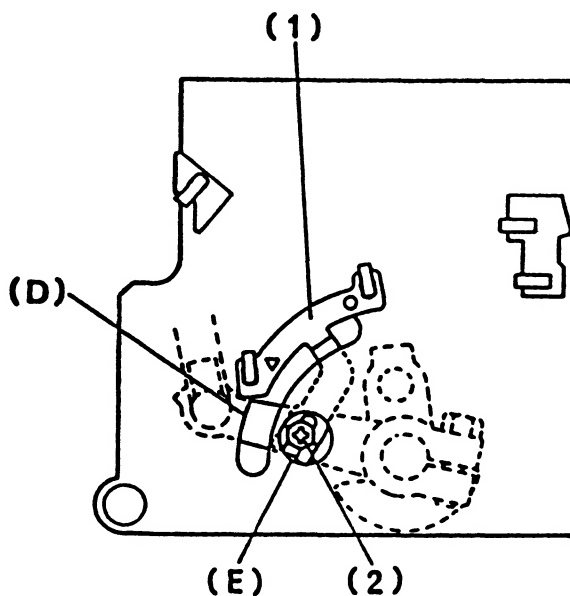


(Fig.65)

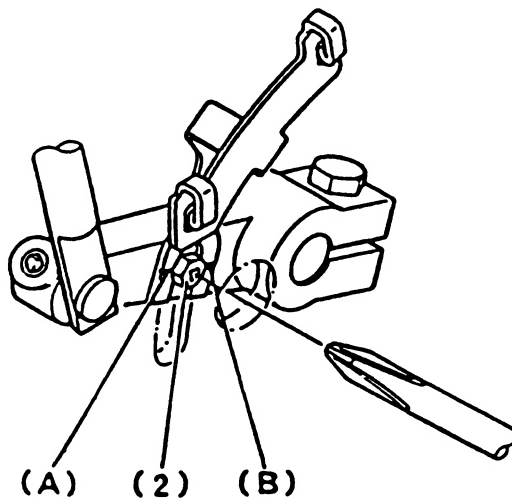
Oscillating thread guide position 206-208-228-734-734D.

Checking:

1. Remove rubber cap from operating hole (E).
2. Turning hand wheel, bring the set screw (2) on the oscillating thread guide (1) to the visible area.
3. Check and see if the oscillating thread guide (1) is positioned as follows;
 - A. Engraved marks (A and B) align with center of screw (A).
 - B. The bent ear (C) runs along the center arc of arcuate hole (D).

Adjustment:

1. Loosen screw (2) and adjust as above.



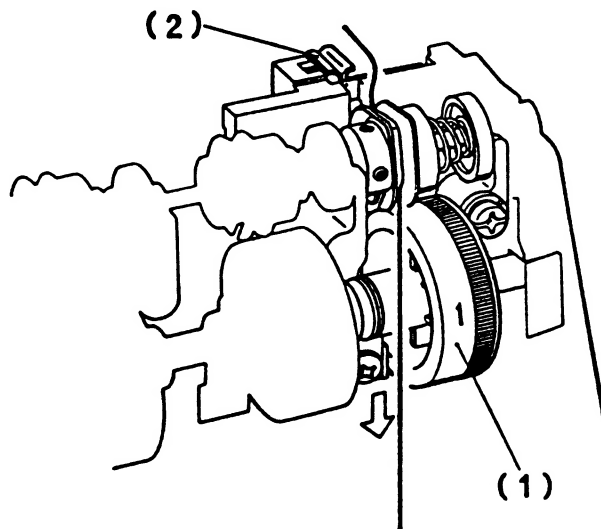
ADJUSTMENT OF THREAD TENSION REGULATORS

Checking:

1. Set all tension dials (1) at "1" and remove top cover taking care not to turn dials.
2. Measure tension amount of each dial without threading tension plates (2). Use cotton thread #50.

Standard tensions of all dials:

Left needle 10-15 grams
Right needle 5-10 grams
Upper looper 5-10 grams
Lower looper 10-15 grams



Adjustment:

1. Loosen screw (3).
2. Adjust tensions by turning eccentric sleeve (4).
3. Tighten screw (3) taking care not to turn eccentric sleeve.
4. Recheck tensions.

